

AUTHORS: Zelentsov, V. V., Savich, I. A., SOV/20-122-1-21/44  
Spitsyn, Vikt. I., Member, Academy of Sciences, USSR

TITLE: On the Problem of Stereochemistry of Intracomplex Compounds  
of Vanadyl (K voprosu o stereokhimii vnutrikompleksnykh  
soyedineniy vanadila)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 122, Nr 1,  
pp 80 - 81 (USSR)

ABSTRACT: Some problems as mentioned in the title concerning the  
stereochemistry of vanadyl compounds with azomethyl  
derivatives of the aromatic o-oxy-aldehydes are  
discussed in this paper. Although the magnetic moment  
of the complex compounds of vanadyl does not depend  
upon the coordination number of the central atom  
it is possible to draw some conclusions on the mentioned  
stereochemistry by comparing this moment with the  
results of analyses. The crystalline intracomplex  
vanadyl compounds which were synthesized by the authors  
were analyzed after having been dried until a constant  
weight was reached and their magnetic susceptibility

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On the Problem of Stereochemistry of Intracomplex  
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was determined. The chemical analysis proves that they contain no solvents (Table 1). As table 2 shows the magnetic moments of the synthesized compounds are between 1,76 and 1,80 mv. If the oxygen atom takes as a rule a single place in the coordination system the coordination number of vanadium is not six but five in these compounds. This is in contrast to reference 2. The assumption that the vanadium ion lies in the base of a tetragonal pyramid is more likely to be right. This is proved by the fact that in vanadyl-o-oxy-quinoline (Ref 4) the pyridine molecule is connected with the central ion as regards the coordination. The free pair of electrons of the nitrogen atom takes the free 4p-orbit in the pyridine molecule. The square pyramid grows steadily until it is an octahedron. Based upon the mentioned facts the authors are of opinion that the initially mentioned vanadyl compounds have the structure of a square pyramid. Thanks to the  $d^2sp^2$  hybridization the  $\sigma$ -bindings exist. Apart from this a 3d-orbit of vanadium takes part in the formation

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of a solid  $\pi$ -binding with an oxygen atom. The structure  
of those compounds is explained by means of the formulae  
A and B. There are 2 tables and 8 references, 1 of which  
is Soviet.

SUBMITTED: May 27, 1958

Card 3/3

5(4)

AUTHORS:

80V/20-128-3-27/58  
Aminov, T. G., Zelentsov, V. V., Savich, I. A.

TITLE:

Magnetic Susceptibility of Some Oxalate Complexes of Quadrivalent Uranium

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 3, pp 533-535 (USSR)

ABSTRACT:

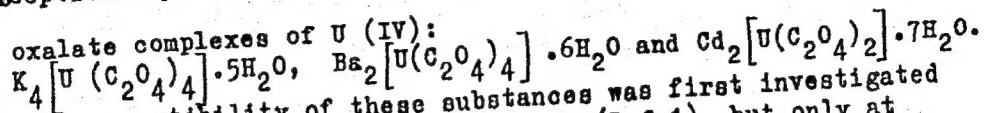
The investigation of the problem mentioned in the title facilitates the answer to the question as to the electronic configuration of quadrivalent uranium. In its ion, 2 nonpaired electrons may occupy the paths 6d or 5f. Then, their ground state is determined - according to Hund's rules - by the terms  $^3F_2$  and  $^3H_4$ , while their effective magnetic moments will amount to 1.63 and 3.58 magnetons of Bohr, respectively, if the interaction of Russell-Saunders takes place. As the electrons of level 6d are more intensely subjected to the influence of electric fields of neighboring atoms, the orbital component is almost completely suppressed in most cases, and the magnetic moment in this case is only determined by the spin, and amounts to  $\mu_{\text{eff}} = 2.83 \mu_B$ . The present paper gives investigation results of the magnetic susceptibility of 3

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Magnetic Susceptibility of Some Oxalate Complexes of Quadrivalent Uranium

oxalate complexes of U (IV):



The susceptibility of these substances was first investigated by A. A. Grinberg and T. K. Petrzhak (Ref 1), but only at room temperature and without correction for the diamagnetism of the cation and oxalate ion. The authors studied this susceptibility over a wider temperature range. The knowledge of the Weiss constant, and the consideration of all diamagnetic corrections, make possible a more accurate computation of the effective magnetic moments of U (IV) in the above-mentioned salts. Table 1 gives their analysis. The magnetic susceptibility was determined by Gui's method. A special device was used making possible the investigation over a temperature range from room temperature up to the boiling point of liquid nitrogen. Mohr's salt was used as a standard substance. The measurement results of the susceptibility of the above complexes are given in table 2 and figure 1. Figure 1 shows that all compounds investigated follow the law of Curie-Weiss above 195°K. At lower temperatures, considerable deviations occur which are different for the individual compounds (similar to Refs 3,4).

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They are due to magnetic anomalies at low temperatures. With the falling temperature, the susceptibility starts increasing more slowly than it would have to according to formula

$\chi = \frac{C}{T + \Delta}$ . Table 2 shows the  $\mu_{\text{eff}}$  and the Weiss constants of the said complexes. V. B. Yevdokimov helped by giving valuable advice. There are 1 figure, 2 tables, and 4 references, 1 of which is Soviet.

ASSOCIATION: Moskovskiy fiziko-tekhnicheskii institut  
(Moscow Physico-technical Institute)

PRESENTED: April 21, 1959, by V. I. Spitsyn, Academician

SUBMITTED: February 24, 1959

Card 3/3

TRAILINA, Ye.P.; SAVICH, I.A.; ZELENTSOV, V.V.

Synthesis of inner-complex compounds of some cations with Mannich  
bases. Zhur. neorg. khim. 5 no.8:1902-1904 Ag '60. (MIRA 13:9)  
(Mannich bases) (Complex compounds)

67913

S/020/60/130/03/018/065

B011/B016

5.2200(A)  
5(2), 5(3)

AUTHORS: Zelentsov, V. V., Savich, I. A., Spitsyn, Vikt. I.,  
Academician

TITLE: Inner Complex Compounds of Hexavalent Uranium With Azomethine  
Derivatives

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 130, Nr 3, pp 549-551  
(USSR)

ABSTRACT: The present report deals with the stereochemistry of uranyl compounds with Schiff's bases. The compounds mentioned in this paper may be divided into three groups according to the type of the ligand. The authors used three types of Schiff's bases which had been obtained from ethylene diamine (A), aromatic amine (B) as well as from 2-amino-pyridine (V) (see scheme). The analysis revealed that the uranyls of type 1 never contain more than 1 molecule of the solvent (Table 1). The molecule can be removed only by prolonged heating at 160-180°. The nature of the complex and the difficult elimination of the solvent molecule suggest that a donor-acceptor-bond may be formed. Accordingly, the coordination number of uranium in such compounds

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is 7 and will be 6 after elimination of the solvent-molecule. In the second type of the uranyl complexes the case is quite a different one: they contain 2 pyridine molecules which cannot be removed even by prolonged heating at 160-180°. At 200-220° the complexes are destroyed. Also in this case a donor-acceptor-bond is probably formed. The coordination number of the hexavalent uranium in such complexes apparently equals 8. 2-Salicylal-aminopyridine (contrary to salicylal-aniline) readily forms a complex with uranyl even in a neutral medium. As the former differs from the latter only by the occurrence of heterocyclic nitrogen, such a considerable increase in the capability of complex formation may be attributed to heterocyclic nitrogen. It was, however, not possible to produce a complex of uranium with 3-salicylal-aminopyridine. Accordingly, the stability of the complex depends mainly on the position of the heterocyclic nitrogen with respect to the azomethine-group. It was confirmed by analysis that complexes of this type contain no molecules of the solvent. Herefrom the authors conclude that in the complex compounds of uranyl with azomethine-derivatives of the 2-aminopyridine series, a coordination-saturation of

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hexavalent uranium takes place. This is possible only if the heterocyclic nitrogen is coordinated with the central atom. The coordination number of uranium in these compounds is, most likely, equal to 8. Thus, uranium, according to the properties of the Schiff's base, shows a variable coordination number. Taking into account that the uranyl ion has a linear structure, it follows that, from among all possible structural models of the hexavalent uranium complexes with the coordination numbers 6, 7 and 8, such would have to be given preference, in which the ligand atoms combined with uranium are placed in a plane vertical to the direction  $O - U - O$ . Since the high stability of  $UO_2^{2+}$  is due to the participation of the 5 f-orbits of uranium in the bindings with oxygen (Ref 8), the structure of the complexes for the coordination numbers 5, 7 and 8 will correspond to a tetragonal bi-pyramid ( $5f^3 6d^2 7s$ ) I, a pentagonal bi-pyramid ( $5f^3 6d^3 7s$ ) II and a hexagonal bi-pyramid ( $5f^3 6d^3 7s 7p$ ) III (a,b) (Scheme). There are 1 table and 8 ref-

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Inner Complex Compounds of Hexavalent Uranium With  
Azomethine Derivatives

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B011/B016

erences, 2 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova ✓  
(Moscow State University imeni M. V. Lomonosov)

SUBMITTED: October 8, 1959

Card 4/4

TRAILINA, Ye.P.; ZELETSOV, V.V.; SAVICH, I.A.; SPITSYN, Vikt.I., akademik

Spectrophotometric determination of the molecular weights of some  
inner-complex compounds. Dokl.AN SSSR 134 no.4:848-849 0  
'60. (MIRA 13:9)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.  
(Molecular weights) (Complex compounds)

28185

8/190/61/003/010/014/019  
B124/B110

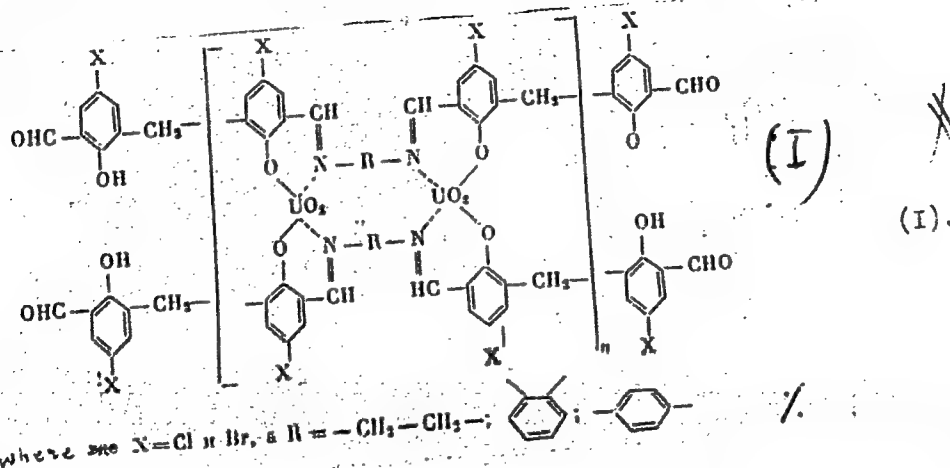
158150 2209, 1155,  
AUTHORS: Zelentsov, V. V., Pai Wen-ming, Savich, I. A., Spitsyn, V. I.  
TITLE: Chelate polymers of uranyl  
PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 10, 1961,  
1535-1543

TEXT: The present paper describes the synthesis and some properties of polychelate- (or coordination-) compounds of uranyl with poly-Schiff's bases which had been synthesized from 3,3'-methylene-bis-5-bromo salicyl aldehyde (BSA) and some diamines. The chelate polymers synthesized can be illustrated by the general formula

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Chelate polymers of uranyl

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B124/B110



As compared to 5,5'-methylene-bis-salicyl aldehyde (MSA), the 3,3'-methylene-bis-5-chloro salicyl aldehyde (CSA) and the 3,3'-methylene-bis-5-

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Chelate polymers of uranyl

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bromo salicyl aldehyde (BSA) react much faster; with considerably higher yields, and without resin formation. The synthesis of CSA and BSA proceeds under heating of a solution of the respective aldehyde in a mixture of concentrated  $H_2SO_4$  and glacial acetic acid with paraformaldehyde. The preparations were purified by recrystallizing from glacial acetic acid. The poly-Schiff's bases were synthesized by reacting of equimolecular quantities of the respective bis-aldehydes with diamines in their methanolic-benzene solution heated to boiling temperature. They are microcrystalline, yellow to light-brown powders insoluble in usual solvents; some properties of these substances are given in Table 1. For synthesizing the chelate polymers of uranyl, the reaction of uranyl acetate with the corresponding dialdehydes and diamines (molar ratio 1 : 1 : 1) in benzene-alcoholic solution heated to boiling temperature is most advantageous. In this way, six chelate polymers of uranyl were synthesized, the composition and some properties of which are given in Table 2. The formulas assumed on the basis of results of ultimate analysis are confirmed by the infrared absorption spectra. All chelate polymers of uranyl are almost insoluble in usual solvents; in pyridine and tetrahydrofuran, they are poorly soluble. Up to 270-300°C, they are stable, and with heating (10 hr) to 200°C no

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Chelate polymers of uranyl

considerable loss in weight occurs. The derivatives of CSA are somewhat more resistant to heat than those of BSA; the heat resistance of polychelates of uranyl decreases in the sequence o-phenylene diamine > p-phenylene diamine > ethylene diamine. The density of compounds synthesized from BSA is lower than that of compounds synthesized from CSA. With equal dialdehyde it decreases in the sequence ethylene diamine > o-phenylene diamine > p-phenylene diamine. All synthesized polychelates of hexavalent uranium are paramagnetic. The synthesis of 5-chloro salicyl aldehyde, 5-bromo salicyl aldehyde, BSA, CSA, poly-Schiff's bases, and uranyl polychelates is described. There are 2 tables and 12 references: 2 Soviet and 10 non-Soviet. The two most recent references to English-language publications read as follows: C. S. Marvel, N. Tarköy, J. Amer. Chem. Soc., 80, 832, 1958; C. S. Marvel, P. V. Bonsiguary, J. Amer. Chem. Soc., 81, 2668, 1959, C. S. Marvel, N. Tarköy, J. Amer. Chem. Soc., 79, 6000, 1957.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova  
(Moscow State University imeni M. V. Lomonosov)

SUBMITTED: November 21, 1960  
Card 4/11



ZELENTSOV, V.V.; TRAILINA, Ye.P.; GLUSHKO, Yu.V.; SAVICH, I.A.; SPITSYN,  
VIKT.I.

Inner-complex uranyl compounds with derivatives of 8-hydroxyquino-  
line of the type of Mannich bases. Zhur.neorg.khim. 6 no.5:1063-  
1065 My '61. (MIRA 14:4)

(Uranyl compounds)

TRAILINA, Ye.P.; ZELENTSOV, V.V.; SAVICH, I.A.; SPITSYN, Vikt.I.

Solubility products of inner-complex compounds of copper, nickel,  
and uranium with 8-hydroxyquinoline. Zhur.neorg.khim. 6 no.9:  
2048-2051 S '61. (MIRA 14:9)  
(Organometallic compounds)

ZELENTSOV, V.V.

Diamagnetic susceptibility of inner complex compounds of molybdenyl.  
Zhur.ob.khim. 31 no.9:2823-2824 S '61. (MIRA 14:9)

1. Moskovskiy fiziko-tekhnicheskii institut.  
(Molybdenum compounds--Magnetic properties)

TRAILINA, Ye.P.; ZELENTSOV, V.V.; SAVICH, I.A.; BYLYNA, E.A.;  
YEVDOKIMOV, V.B.

Magnetic susceptibility of the chelate compounds of divalent copper,  
nickel, and cobalt with Mannich bases. Zhur. fiz. khim. 35  
no. 4:960-962 Ap '61. (MIRA 14:5)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.  
(Chelates—Magnetic properties)

ZELENTSOV, V.V.

Magnetic susceptibility of inner complex compounds of vanadyl  
with tridentate ligands. Dokl. AN SSSR 139 no.5:1110-1111  
Ag '61. (MIRA 14:8)

1. Moskovskiy fiziko-tekhnicheskii institut. Predstavleno  
akademikom V.I. Spitsynym.  
(Vanadyl ion)  
(Complex compounds—Magnetic properties)

ZELENTSOV, V.V.; KALINNIKOV, V.T.; VOLKOV, M.N.

Vanadyl alkanoates having anomalous magnetic properties. Zhur.  
struk. khim. 6 no. 4:647-649 J1-Ag '65 (MIRA 19:1)

1. Moskovskiy fiziko-tekhnicheskii institut. Submitted October 7,  
1964.

SHKOL'NIKOVA, L.M.; ZELEVTSOV, V.V.; MAKAREVICH, L.G.

Crystal chemical data on inner-complex compounds of N-substituted salicylalminine derivatives. Part 3: Copper (II) and cobalt (II) salicylal-N-aryl iminates. Zhur. strukt. khim. 6 no. 4:653 J1-Ag (MIRA 19:1) '65.

1. Nauchno-issledovatel'skiy institut khimicheskikh reaktivov i osobo chistykh veshchestv i Moskovskiy fiziko-khimicheskiy institut. Submitted December 22, 1964.

AMINOV, T.G.; ALIENOV, V.M.; ZELENTSOV, V.V.; YEVDOKIMOV, V.B.

Magnetic susceptibility of the oxalates of bivalent chromium, iron, and copper. Zhur. fiz. khim. 39 no.3:704-709 Mr '65. (MIRA 18:7)

1. Moskovskiy fiziko-tekhnicheskii institut i Moskovskiy gosudarstvennyy universitet imeni Lomonosova.



ZELENTSOV, V.V.; KALINNIKOV, V.T.; VOLKOV, M.N.

Magnetochemistry of vanadyl salts with dicarboxylic acids.

Zhur. neorg. khim. 10 no.6:1506-1507 Je '65.

(MIRA 18:6)

ZELENTSOV, V.

A machine controls production. Inform biul.VDNKH no.11:7-8 N '64.  
(MIRA 18:2)

KALINNIKOV, V.T.; ZELENTSOV, V.V.; VOLKOV, M.N.; SHOSTAKOVSKIY, S.M.

Certain features of the infrared absorption spectra of vanadyl compounds with carboxylic acids. Dokl. AN SSSR 159 no.4:882-884 (MIRA 18:1)  
D '64

1. Moskovskiy fiziko-tekhnicheskii institut. Predstavleno akademikom V.I. Spitsynym.

ZELENTSOV, Y.V.; PSHEVICHKIN, P.A.

Study of the magnetic characteristics of vanadyl salicylal-  
2'-hydroxyanilate and its 5-chloro- and 5-bromo derivatives.  
Zhur. strukt. khim. 5 no.5: 714-718 S-O '64 (MIRA 18:1)

1. Moskovskiy fiziko-tekhnologicheskii institut i Moskovskiy  
gosudarstvennyy universitet imeni M.V. Lomonosova.

ZELENTSOV, V.V.; AMINOV, T.G.

Magnetic susceptibility of copper (II) oxalate and succinate.  
Dokl. AN SSSR 158 no.6:1393-1395 O '64. (MIRA 17:12)

1. Moskovskiy fiziko-tekhnicheskii institut.

ZELENTSOV, V. V.; KALINNIKOV, V. T.

Magnetic susceptibility of vanadyl compounds with carboxylic acids. Dokl. AN SSSR 155 no. 2:395-397 Mr '64. (MIRA 17:5)

1. Moskovskiy fiziko-tekhnicheskii institut. Predstavleno akademikom V. I. Spitsynym.

ZELENTSOV, V.V.

Investigation of infrared spectra of inner-complex compounds of uranyl with Schiff's bases and the determination of the length of the  $U=O$  bond. Dokl. AN SSSR 146 no.1:97-99 S '62. (MIRA 15:9)

1. Moskovskiy fiziko-tekhnicheskii institut. Predstavleno akademikom V.I. Spitsynym.

(Uranyl compounds--Spectra) (Schiff bases)  
(Chemical bonds)

ZELENTSOV, V.V.

Stereochemistry of inner complex compounds of copper and vanadyl  
exhibiting anomalous magnetic properties. Zhur.neorg.khim. 7  
no.6:1299-1304 Je '62. (MIRA 15:6)

1. Moskovskiy fiziko-tehnicheskii institut.  
(Copper compounds—Magnetic properties) (Vanadium compounds)



ZELENTSOV, V.V.

Magnetic susceptibility and stereochemistry of chelate compounds  
of copper. Trudy MFTI no.8:131-136 '62. (MIRA 15:5)  
(Copper compounds--Magnetic properties)

3  
BREKHOVSKIKH, S. M.; VIKTOROVA, Yu. N.; ZELENINOV, V. V.; ZELENISOVA, S. A.

"Effect of some oxides on silicon-oxygen skeleton of oxygeneous glasses."

report submitted for 4th All-Union Conf on Structure of Glass, Leningrad,  
16-21 Mar 64.

ZELENTSOV, V.V.

Inner-complex compounds of uranyl with triphosphate ligands.  
Zhur. neorg. khim. 8 no.10:2413-2415 0 '63. (MIRA 16:10)

1. Moskovskiy fiziko-tekhnicheskii institut.  
(Uranyl compounds) (Coordination compounds)

ZELENTSOV, V.V.; VOLKOV, M.N.; ALLENOV, V.M.; AMINOV, T.G.

Magnetic susceptibility of copper benzoate. Zhur. neorg. khim.  
10 no.2:564-565 F '65. (MIRA 18:11)

1. Moskovskiy fiziko-tekhnicheskii institut. Submitted June  
30, 1964.

KUZNETSOV, Yu.N.; ZELENKOVA, L.V.

Effective use of a sample in analysis by blowing the test powder into  
the arc. Zav. lab. 31 no.2:180-183 '65. (MIRA 18:7)

1. Tsentral'nyy nauchno-issledovatel'skiy institut olovyannoy promyshlen-  
nosti.

ZELENTSOVA, G.A.

Foreign body of the bronchi. Vest.oto.-rin. 20 no.4:102 J1-Ag'58  
(MIRA 11:7)

1. Iz kliniki bolezney ukha, gorla i nosa (dir. - prof. A.A. Atkarskaya)  
Gor'kovskogo meditsinskogo instituta.  
(BRONCHI--FOREIGN BODIES)

BABIN, Ye.P.; PLYUSHIN, V.G.; RODIGIN, N.M.; ZELENTSOVA, M.I.

Reversible sequential reactions in the propylation of  
diisopropylbenzene with aluminum chloride. Izv.Sib.otsd.AN SSSR  
no.5:66-72 '60. (MIRA 13:7)

1. Ural'skiy filial AN SSSR.  
(Benzene) (Propylation)

BABIN, Ye.P.; PLYUSHIN, V.G.; ZELENITSOVA, M.I.; RODIGIN, N.M.

Reversible reactions in the alkylation of isopropylbenzene  
by propylene. Izv.Sib.AN SSSR no.11:57-61 '59.  
(MIRA 13:4)

1. Ural'skiy filial AN SSSR.  
(Cumene) (Alkylation) (Propylene)



LYSENKO, A.P.; YAKUNINA, G.I.; PLYUSHIN, V.G.; ZELENTSOVA, M.I.

Production of n-tert-butyl phenol by alkylation of phenol with  
isobutylene in the presence of hydrogen fluoride. Khim. prom.  
41 no. 12:887-891 D '65 (MIRA 1961)

L 09960-67 EWT(m)/EWP(k)/EWP(t)/ETI IJP(c) JD/IM/JG  
ACC NR: AP6035674 SOURCE CODE: UR/0413/66/000/019/0013/0013  
15

INVENTOR: Karavaytsev, V. I.; Zelentsova, N. M.

ORG: none

TITLE: Method of manufacturing rhenium wire. Class 7, No. 186379

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 19, 1966, 13

TOPIC TAGS: rhenium wire, wire technology, wire manufacture

ABSTRACT: This Author Certificate introduces a method for manufacturing rhenium wire, which includes annealing in vacuum or protective atmosphere and drawing. To obtain wire up to 0.01 in diameter, improve wire quality and increase the yield, the annealing is carried out at 1400—1500C after each 25—30% reduction with wire moving at a rate of 1—8 m/min.

SUB CODE: 13/ SUBM DATE: 27Mar64/ ATD PRESS: 5105

Card

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UDC: 669.849:621.778.04



An experimental study ...

S/066/63/000/001/002/002

and replace it of ammonia by propane at about 1/9 the cost. Compressed propane was delivered to the upper part of a contact condenser and forced upward against a flow of cooling water. The condensate and water passed into the lower part of the condenser where the phases were separated. The use of propane increased the cooling capacity. The equilibrium concentration of propane in water under ordinary working conditions (pressure of 12 to 15 atm) was found to be about 1%.

1901, no. 2; W. F. Hoot, Petrol. Refiner, vol. 30, no. 1; W. G. Knox, T. Hagg, Ibid., Process Engng., 1904, no. 1; W. F. Hoot, Petrol. Refiner, vol. 30, no. 5, 1904, T. Hagg, Ibid., 1904, no. 1.

AEROV, M.E., doktor tekhn.nauk; BYSTROVA, T.A., kand.tekhn.nauk; ZELENTOVA, N.I.,  
inzh.; KLIMENKO, A.P., kand.tekhn.nauk; CHEGLIKOV, A.G., kand.tekhn.nauk;  
KOSTYUK, V.I., inzh.

Experimental study of the contact heat exchange. Khol.tekh. 40 no.1:  
37-40 Ja-F '63. (MIRA 16:3)

1. Nauchno-issledovatel'skiy institut sinteticheskikh spirtov i  
organicheskikh produktov (for Aerov, Bystrova, Zelentsova).
2. Institut ispol'zovaniya gaza AN UkrSSR (for Klimenko, Cheglikov,  
Kostyuk).

(Heat-Transmission)

(Refrigerants)

ZELENTSOVA, N.I.

A new continuous filter. Rationalizatsia 14 no.4:19-20  
'64.

ZELENTSOVA, N.I.; BERGO, B.G.; AEROV, M.A.; PLATONOV, V.M.

Investigating the design of a set-up for separating casing-head  
gases using a liquid coolant. Gaz. prom. 8 no.6:30-35 '63.

(MIRA 17:8)

USSR/Fitting Out of Laboratories - Instruments.  
Their Theory, Construction, and Use.

H-

Abs Jour : Ref Zhur - Khimiya, No 3, 1957, 8746

Author : Aerov, M.E., and Zelentsova, N.I.

Inst :

Title : Apparatus for the Continuous Control of Liquid Purity  
on the Basis of the Difference in the Distillation  
Temperatures of the Light and Heavy Fractions.

Orig Pub : Zavod. laboratoriya, 1956, 22, No 6, 739-740

Abstract : The apparatus consists of two continuously operated  
series-connected semimicro-rectification columns. Each  
column consists of a rectification section 320 mm long  
and 10 mm in diameter: the lower portion of the column  
is connected to the pot and the upper portion to the  
distillate receiver. The withdrawal of the distillate  
and of the pot liquid is controlled by the immersion  
depth of wires placed in capillary tubes. The column

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*Sci Res Inst Synthetic Alcohol & Organic Products*



USSR/Fitting Out of Laboratories - Instruments.  
Their Theory, Construction, and Use.

H-

Abs Jour : Ref Zhur - Khimiya, No 3, 1957, 8746

is packed with wire rings. The substance to be analyzed is continuously fed in at the middle of the column. The proportion of the liquid collected as the distillate depends on the amount of volatile substance present in the liquid. The equipment provides for the monitoring of the results by means of a recording potentiometer. The above-described equipment has been used in the determination of the purity of isopropyl benzene with distillation rates of 40 ml per hour. The temperature is measured with thermocouples.

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163248

S/844/62/000/000/114/129  
D207/D307

15.2120

AUTHORS: Brekhovskikh, S. M., Vereshchinskiy, I. V., Grishina, A. D., Zelentsova, S. A., Revina, A. A. and Tykachinskiy, I. D.

TITLE: Electron paramagnetic resonance in irradiated glasses of various compositions

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 660-667

TEXT: The purpose of the work was to prepare a glass for making test tubes and ampoules used in EPR studies of irradiated substances; such glass must not give an appreciable EPR signal after being subjected to an ionizing radiation. The basic glass composition was  $3\text{SiO}_2 \cdot 0.5\text{Al}_2\text{O}_3 \cdot 0.75\text{CaO} \cdot 0.2\text{MgO}$ , which was varied by additions of  $\text{Na}_2\text{O}$ ,  $\text{K}_2\text{O}$ ,  $\text{Li}_2\text{O}$ ,  $\text{BaO}$ ,  $\text{CeO}_2$ , or  $\text{Fe}_2\text{O}_3$ , by altering the proportions of  $\text{CaO}$  or  $\text{MgO}$ , and by replacing 20 wt.%  $\text{SiO}_2$  with the same

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amount of  $B_2O_3$ . Samples were prepared from quartz sand and from materials of 3 'pure' and 'analytically pure' grades, in corundum crucibles heated to 1450 - 1570°C. The glasses were irradiated with 800 kev electrons at the rate of  $10^{21}$  ev.cm<sup>-2</sup>.hour<sup>-1</sup> at room temperature, or with 80 kev x rays ( $10^{17}$  ev.cm<sup>-3</sup>.sec<sup>-1</sup>) at 77 - 320°K. The spectra were recorded with an apparatus based on JHP-2 (EPR-2) of the Institut khimicheskoy fiziki (Institute of Chemical Physics). It was found that in some cases there was no correlation between coloring and generation of paramagnetic centers by electrons and x rays. The addition of  $Fe_2O_3$  or  $CeO_2$  reduced the EPR signal intensity of the irradiated glasses, while the other additives either raised the original signal intensity ( $Al_2O_3$  or alkali oxides together with  $B_2O_3$ ) or produced an additional peak ( $B_2O_3$  alone or  $BaO$ ). Annealing of irradiated glasses reduced the concentration of paramagnetic centers produced by second irradiation. Using this information a glass of unstated composition, named 'A', was prepared, which gave no noticeable EPR signal after irradiation and was,

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therefore, suitable for making test tubes used in radiation chemistry. The work on EPR and x ray irradiation was carried out in the Laboratoriya radiatsionnoy khimii (Radiation-Chemistry Laboratory), directed by Doctor of Chemical Sciences N. A. Bakh, who took a direct part in the discussion of the results. There are 8 figures and 2 tables.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut stekla  
(All-Union Scientific Research Institute for Glass);  
Institut fizicheskoy khimii AN SSSR (Institute of  
Physical Chemistry, AS USSR); Institut elektrokhimii  
AN SSSR (Institute of Electrochemistry, AS USSR)

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ACCESSION NR: AP4028417

S/0181/64/006/004/0981/0985

AUTHORS: Volkov, D. I.; Tarasov, B. V.; Zelentsova, S. A.

TITLE: Magnetic properties of glass containing additions of manganese, cobalt, and nickel

SOURCE: Fizika tverdogo tela, v. 6, no. 4, 1964, 981-985

TOPIC TAGS: glass, magnetic susceptibility, temperature dependence, Curie law, Curie Weiss law

ABSTRACT: The temperature dependence of the magnetic susceptibility of glass containing up to 13.8% Mn, 14.6% Co, and 14.5% Co was measured. The initial glass (without addition of Mn, Co, or Ni ions) was diamagnetic, with a susceptibility of  $-0.35 \cdot 10^{-6}$ , practically independent of temperature. With the addition of the indicated ions, the glasses became paramagnetic and strongly temperature dependent. The reciprocal of the susceptibility proved to depend linearly on the temperature for all compositions of glass tested, but it was found not to be zero at absolute zero. This means that the relation does not simply follow the Curie law, but is rather expressed by the Curie-Weiss law:  $\chi = \frac{C}{T-\theta}$ , where  $\chi$  is the susceptibility,

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C the Curie constant, T the absolute temperature, and  $\theta$  the Weiss constant. The observed linear dependence was found to hold only at low temperatures. At high temperatures the relationship is destroyed, and the law ceases to hold, the changes in magnetic susceptibility becoming irreversible. Heating and cooling lead to different susceptibility values. This irreversible character holds for glasses containing any of the investigated ions, and this suggests that such behavior is due solely to changes in the framework of the glass itself. Orig. art. has: 4 figures, 1 table, and 1 formula.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University)

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Card 2/2

VOLKOV, D.I.; TARASOV, B.V.; ZEIENTSOVA, S.A.

Magnetic properties of glasses with admixtures of manganese,  
cobalt, and nickel. Fiz. tver. tela 6 no. 4:981-985 A: '64.  
(MIRA 1':6)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

BREKHOVSKIKH, S. M.; VIKTOROVA, Yu. N.; ZELENISOV, V. V.; ZELENISOVA, S. A.

3

"Effect of some oxides on silicon-oxygen skeleton of oxygeneous glasses."

report submitted for 4th All-Union Conf. on Structure of Glass, Leningrad,  
16-21 Mar 64.



L 12884-66 EWP(e)/EWT(m)/EPF(n)-2/EWP(s)/ENA(h) GG/WH

ACC NR: ATG000496

SOURCE CODE: UR/0000/65/000/000/0266/0269

AUTHOR: Brekhovskikh, S. M.; Viktorova, Yu. N.; Zelentsov, V. V.; Zelentsova, S. A.

ORG: none

TITLE: Effect of the chemical nature of certain elements on the radiation-optical resistance of irradiated glass. 33 B+1

SOURCE: Vsesoyuznoye soveshchaniye po stekloobraznomu sostoyaniyu. 4th, Leningrad, 1964. Stekloobraznoye sostoyaniye (Vitreous state): trudy soveshchaniya, Leningrad, Izd-vo Nauka, 1965, 266-269

TOPIC TAGS: optic property, glass property, gamma irradiation

ABSTRACT: The dependence of the radiation-optical resistance on the position of a variable element in the periodic system is studied in glasses of the system  $4\text{SiO}_2 \cdot \text{Na}_2\text{O} \cdot 0.5\text{MeO}$  (or  $0.25\text{Me}_2\text{O}$ ). As a rule two absorption bands, at  $400 - 450$  and  $600 - 650 \text{ m}\mu$ , appear in the spectra as a result of  $\gamma$ -radiation. The first band can be ascribed to the F-center which represents a quasi-ion  $[\text{Me}^+ + \bar{e}]$ . The intensity of this band is directly related to the position of Me in the periodic system. The smaller the electronegativity of Me, the greater the probability of the localization of a migrating secondary electron near it and the more intense

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the absorption band. All glasses containing elements of groups I and II as the third component have similar spectra, with smaller absorption at 400 mμ for glasses with Mg and Ca. The absorption in the 600 mμ region indicates, in all probability, the presence in the glass of oxygen vacancies and the formation of free oxygen atoms. Elements of group III differ appreciably more chemically than those of groups I and II; therefore their spectra substantially differ from one another. For elements of group IV an increase of radiation-optical resistance is observed with a decrease of ion radius only for the first three elements. For glasses containing elements of group V the radiation-optical resistance increases by a factor of 3.3 on replacing SrO(4d<sup>0</sup>) by ZrO<sub>2</sub>(4d<sup>2</sup>) and Nb<sub>2</sub>O<sub>5</sub> (4d<sup>3</sup>), which is associated with a decrease of the ion radius from Sr to Nb. Glasses containing elements of group VI are governed by the same rule. Orig. art. has: 3 figures.

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HW

TRUTOVSKIY, Boris Borisovich; ZELENTSOVA, S.P., red.; RYBINA,  
V.P., red.

[Potentials for reducing the time of designing and plan-  
ning of production] Rezervy sokrashchenia srokov pro-  
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"Nauka," 1964. 183 p. (MIRA 17:6)

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